



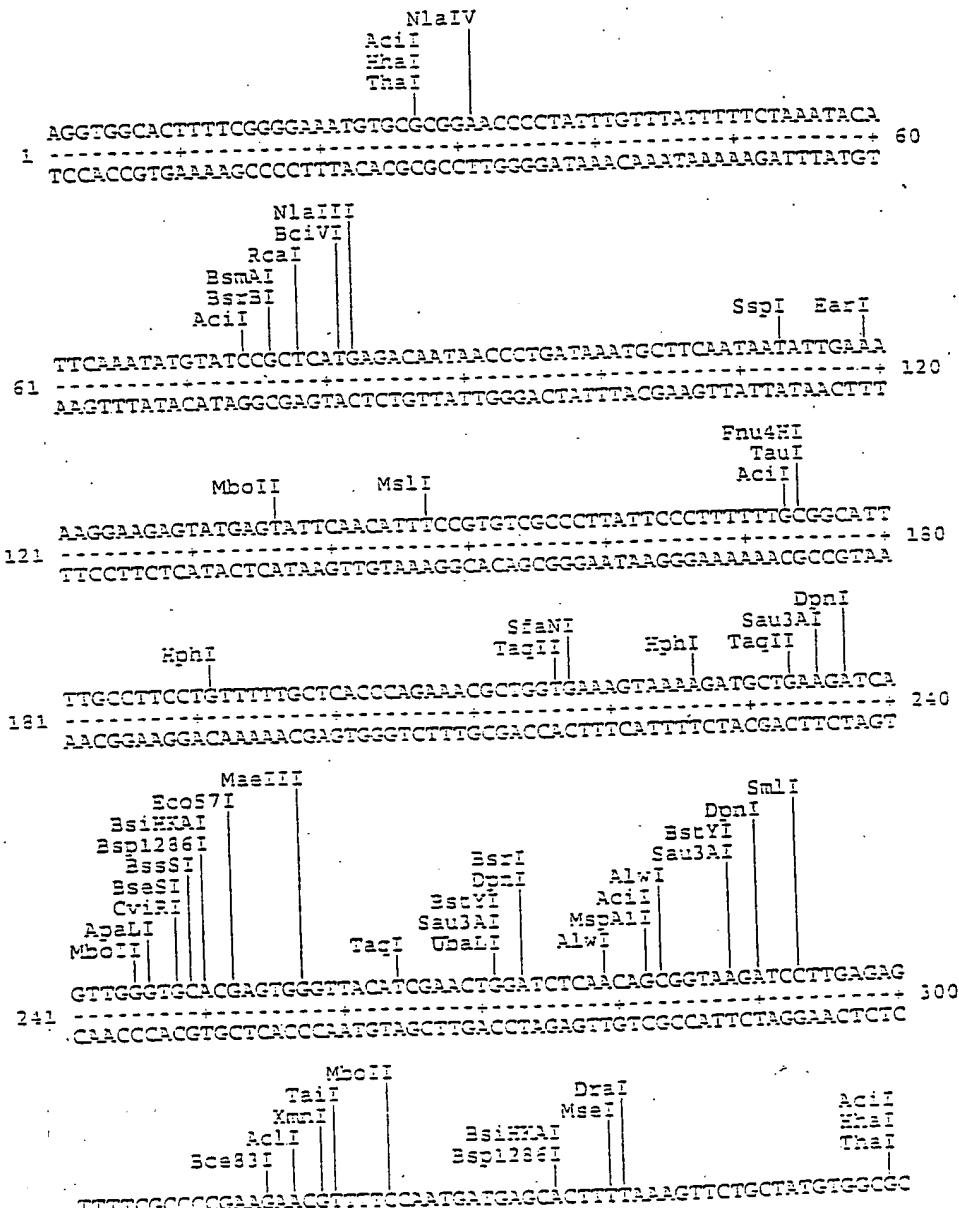
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1/21

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Fig. 1A

Restriction map of plasmid ms23



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Fig. 1A (cont.)

Fig. 1A (cont.)

VspI Tsp509I BccI Avall
 AluI MspI BsrI BciI Sau96I
 CviJI NciI MnII FokI CvIRI
 BfaI ScrFI TACTCTAGCTTCCGGCAACAAATTAAATAGACTGGATGGAGGCCGATAAATTTGCAAGGACC
 721 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
 ATGAGATCGAAGGGCCGTTGTTAATTATCTGACCTACCTCCGCCTATTTCAACGTCTGG 730

 CviJI Cac8I MspI
 CviJI CviJI BsrFII
 HaeIII BglI CviJI CvIRI NlaIV
 Sau96I MspI HhaI MwoI
 KpnI
 ACTTCTGCCTCGGCCCTCCGGCTGGCTGGTTATTGCTGATAATCTGAGGCCGGTGA
 781 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
 TGAAGACGGCAGCCGGAGGCCAACCGACCAATAACGACTATTTAGACCTCGGCCACT 840

 AcII BccI
 BsaI BbvI
 BsmAI CviJI HaeIII
 Thal BsrI NlaIV
 BpmI Pvu4HI TspRI CviJI BscGI Pf11108I
 HphI Simi BsrDI TseI Sau96I CviJI BscGI MnII
 Hin4I GCGTGGGTCTGGGTTATCTTCAGGCACTGGGCCAGATGGTAAGCCCTCCGTATCGT
 841 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
 CGCACCCAGAGGCCGTTAGTAAACGTCGTGACCCCCGGTCTACCATTCGGAGGGCATAGCA 900

 HinPf BseMII
 AhdI DpnI
 HaeIV Sau3AI
 Hin4I BscGI PstI FokI DdeI
 AGTTATCTACGACGGGAGTCAGGCACTATGGATGAACGAAATAGACAGATCGCTGA
 901 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
 TCAATAGATGTGCTGCCCTCTAGTCGTTGATACTACTTGCTTATCTGCTAGCGACT 960

 MnII Bst4CI DpnI
 NlaIV MseI BstVI
 Bani TspRI Maall CjePI Sau3AI
 TACTGATGGCTCACTGATTAAGCATTTGCTACTGTAGACCCAAGTTTACTCATATAACT
 961 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
 CTATCCACGGAGTGACTAATTCGTAACCATTCAGTCTGGTCAAATGAGTATATATGA 1020

 DpnI
 BstVI
 Sau3AI
 AlwI
 AlwI
 BfaI
 DpnI
 BstVI
 Sau3AI
 CjePI DpnI MboII
 MseI BstVI
 Tsp509I DpnI HphI
 Dral MseI MseI
 TTAGATTGATTAAAGCTGATTTTAAATTTAAAGGATCTAGGTGAAGATCCTTTTGA
 1021 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
 AATCTTAACTAAATTTGAGTAAAGTAAATTTCTAGATCCACTTCTACGGAAACT 1080

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Fig.1A(cont.)

1081 TAATCTCATGACCAATTCCCTTAACTGAGTTTCGTTAACGTGAGCAGACCCCCGT
 RcaI NlaIII MseI TaiI UbaLI Bsp24I CjePI CjeI TspRI BseMII DdeI SmaI BscGI
 ATTAGAGTACTGGTTTACGGAAAGCACTGAGCGCTAGGTGACTCGCAGTCTGGGCA 1140

1141 AGAAAAAGATCAAAGGATCTTCTTGAGATCCTTTTCTGCGCTAATCTGCTGCTTGC
 DpnI BstYI Sau3AI MboI DpnI BstYI Sau3AI DpnI Tth111II SceB3I HhaI Fnu4HI CviRI
 Sau3AI CjeI CjeI Bsp24I AlWI SmaI Tth111II ThaI Tsai Cac8I
 DpnI BstYI Sau3AI DpnI BbvI MwoI
 TCTTTCTAGTTCTAGAAGRACTCTAGGAAGAGACGGCATTAGACGACGAAACGT 1200

1201 AACAAACACCCACCGCTACCGAGGGTGGTTGGCCCGATCAAGAGCTACCPACTCT
 HgiIII AcII MspAII CviJI AluI CjeI DpnI CjeI
 Tth111II Tth111II CjeI Sau3AI MspI CjeI
 AcII CjeI CjeI
 AACAGGCTTCATTGACCGAAGTCTGCTCGCGTCTATGGTTATGACAGGAAGATCACAT 1260

1261 TTTTCCGAAGGTACTGGCTTACGGAGCCAGATAACCAATTACTGTCCTTAGTGTA
 Eco57I MaeIII BsrI Bsp24I CjeI CjeI Bcefi Bst4CI BfaI
 CviJI CjeI HaeIII BsrI SfcI AciI MnII
 AAAAGGCTTCATTGACCGAAGTCTGCTCGCGTCTATGGTTATGACAGGAAGATCACAT 1320

1321 CjeI CviJI CjeI HaeIII BsrI SfcI AciI MnII
 Bsp24I HaeIII CviJI BsrI BsrI BsrI BsrI
 MaeIII BsrI TsrI TsrI TsrI TsrI TsrI TsrI
 BbvI BsrI TsrI TsrI TsrI TsrI TsrI TsrI
 GCGTAGTTAGGCCACCACTTCAGAACTCTGTAGCAACCCCTACATAACCTCGCTCTGCT 1380

1381 CGGCATCAATCCCGTGTGAACTCTGAGACATCGTGGCGATGTATGGAGCGAGACGA
 BsrI Fnu4HI TsrI Fnu4HI TsrI TsrI PstI NciI ScrI SmaI Hinfi
 BbvI AlwNI CviJI MmaI TspRI BceB3I MspI HinfI
 MaeIII BsrI TsrI TsrI TsrI TsrI TsrI TsrI
 BbvI BsrI TsrI TsrI TsrI TsrI TsrI TsrI
 AATCCCTGTTACCAAGTGGCTGCTCCAGTGCGATAAGTCGTGTCTTACCGGGTTGACTC 1440

TTAGGACATGGTCACGGACGGTCAACCGCTATTCAAGACAGAATGGCCAAACCTGAG
 BbvI

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Fig.1N(cont.)

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Fig.1A(cont.)

ACCGAGTGTACAGGAGGACCGATAAGGGGACTAAGGACCTATTGGCATAATGCCCGAA

<p style="text-align: center;">CviJI Fnu4HI TseI AciI Fnu4HI TauI Cac8I BsrBI AluI CviJI MwoI</p> <p style="text-align: center;">1861</p>	<p style="text-align: center;">PstI BbvI MnII TaqII HinfI Fnu4HI BbvI BsiEI HhaI TsaI</p> <p style="text-align: center;">1870</p>
<p>TGAGTGAGCTGATAACGCTCGCCGAGCCGAACGAGCGAGCGAGTCAGTGAGCGA</p>	
<p style="text-align: center;">AciI EarI SapI</p> <p style="text-align: center;">MwoI HaeII HhaI</p> <p style="text-align: center;">1921</p>	<p style="text-align: center;">MnII ThaI HinfI TfiI CviJI HaeIII BaaI GdiII PauI BslI HhaI ThaI MnII CjePI Msal VspI</p> <p style="text-align: center;">1930</p>
<p>GGAGCCGAAGACCCCCAATACGCATAACGCCCTCTCCCCGGCGTTGGCGATTGATTA</p>	
<p>CCTTCGGCTTCTCGGGGTTATGCGTTGGGGAGACGGGCGCGAACCGGTAAGTAAT</p>	
<p style="text-align: center;">BccI DpnI NlaIV SamHI BbvI SalI AlwI AluI BbvI CviJI</p> <p style="text-align: center;">1931</p>	<p style="text-align: center;">CviRI Cac8I SfcI CviJI HaeIII Cac8I Mspl BsrFI NcoAIV MwoI BfaI SpeI HhaI Cac8I HhaI ThaI Ascl BssHII CjePI ApoI EcoRI Tsp509I AlwI ClaI TaqI BccI DpnI NlaIV SamHI BbvI SalI AlwI AluI BbvI CviJI</p>

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7/21

Fig. 1A(cont.)

AlwI | HindIII | MwoI | DpnI | Sau3AI | AciI | MspAI | Fnu4HI | CviRI | Tsel |
 ATGcaggCGATCAGCTTGGATCCATCGATGAATTGGCGGCCCTAGTCAGGCGCGC
 1961 TACgtcgCCTAGTTGCAACCTAGGTAGCTACTTAGCCGGCGGTGATCAGGGCGGACG 2040

PstI | BglI | AcI | BsiEI | HincII | AccI | TaqI | SalI | HinfI | BfaI | XbaI | PstI | SmaI | Hin4I | MnlI | MnlI |
 AGTCTAGAGTCGACCGCAAGACCCTTCCTCTATATAAGGAAGTCATTCAATTGGAGAG
 2041 TCAGATCTCAGCTGGCGTTCTGGAGAGATATTCCTTCAGTAAGTAACTAACCTCTC 2100

Avall | NlaIII | Sau96I | BsaJI | BstDSI | CviJI | HaeI | HaeIII | MscI | HaeI | MwoI | Bsp24I | Cje2I | Cje1 | TagI | AvaI | SmaI | XbaI | NcoI | StyI | SfcI | BscGI | Cje1 | Cje2I | Cje1 |
 GACACGCTCGAGTGCCACCATGGTGGTCTGTAGAAAACCCGACCCGTGAAATGAAA 2160
 2101 CTGTGGAGCTCACCGTGGTACAGGAGACATCTTGGGTTGGGACTTTAGTTT

DpnI | BclI | Sau3AI | Tsp509I | Est4C2 | AlwI | NruI | ThaI | Cje1 | DpnI | Bsp24I | Cje2I | sau3AI | Cje2I |
 TagI CviJI RleAI HaeIII BsmI BceI |
 AACCTCGACGCCCTGGGATTTCTGGATGCCAAGCTGGAAATTGAGATCGCTT

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Fig. 1A (cont.)

Fig. 1A (cont.)

2641 TATGCTCTACACCAGCCGAACCTGGTGGACCGATATCACCGTGGTGACCGATGTGCG
 ATTACCGAGATGTGGTCCCCTGTGGACCCACCTGCTATACTGGCAACACTGCGTACAGC + 2700

 HhaI Bst4CI BsaJI HpaI EcoRV CviJI HaeI HaeIII HpaI
 MspI AflII HincII AarI BsaI HpaI
 Hgai MIU1 BspMI BsrI BaaI
 CGAAGACTGTAACCACGCGTCTGTTACTGGCAGGTGGTGGCCAACTGGTATGTCAGGC + 2760
 GCGTTCTGACATTGGTGGCAGACACTGACCCGCCAACCGTTACCACTACAGTGGC

 SfaNI Sau3AI BsaBI AciI AlwI CviRI BspGI PauI BfaI AcII
 2761 TTGAACTGCGTGATGGGATCAAACAGGTGGTGCACCTGGACAAGGCACTAGCGGGACTT + 2820
 AACTTGACGCACTACGCCCTAGTTGTCACCTACGTTGACCTGGTGTGATCGCCCTGAA

 HinfI TfiI AciI HpaI NciI ScrFI MspI Bst4CI Hgai MaeIII Tsp45I
 CviRI BsmPI AciI HpaI MspI BsiI HpaI Bst4CI
 TCCAACTGGTGAATCCGACCTCTGGCAACCGGGTGAAGGTTATCTATGAACTGTGCG + 2880
 ACGTTCAACCTAGGGTGGAGACCGTTGGCCACTTCAATAGAGATACTTGACACGC

 CviJI CjeI CviJI Hgai PauI MspI BsiI SfaNI
 CjeI EcoRV PoiI Thai BsaWI SfaNI
 TCACAGCCAAAAGCCAGACAGAGTGTGATATCTACCCGCTTCCGCTGGCATCCGTCAG + 2940
 AGTGTGGTTTCGGTCTGTCACACTATAGATGGGCGAGCGTAGCCCTAGCCCTAGC

 BstI TspRI TspRI Bst4CI AlwNI CjeI MspI Bst4CI CjeI BsrI CviJI
 TGGCAGTGAAGGGCGAACAGTTCTGATTAACCAACACCGTTCTACTTTACTGGCTTIG + 3000
 ACCGTCACCTCCGCTTGTCAAGGACTAATTGGTGTGGCAAGATGAAATGACCGAAC

 SfaNI MspI BspI HinfI TagI BciI ApaLI
 MspI BspI BspI HinfI TagI BciI MwoI
 RcaI CjeI BceI TfiI TaaI BceI CviRI
 GTCGTCACTGAAAGATGGGACTTGGCTGGCAAAGGATTCGATACGTGCTGATGGTGGACG + 3060
 CAGGAGTCTTCTACGGTGAACGACCGTTCTAAGCTATTGCGAGATACCACTTGC

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Fig. 1A (cont.)

3061 CviJI
 HaeIII
 NlaIV
 MseI
 VspI
 Sau96I
 BsrI
 RsaI
 Bst4CI
 MnII
 SfaNI
 ACCACGGATTAATGGACTGGATTGGGGCCAACTCCTACCGTACCTCGCATTAACCTTAGG
 TGTTGGCTAATTACCTGACCTAACCCCCGGTTGAGGATGGCATGGAGCGTAATGGGATTCG 3120
 3121 BsrI BsrI BsrI NlaIII MsI BbvI Pvu4HI Tsal
 TaqI Eco57I NlaIII MsI SfaNI HphI
 CTGARGNGATGCTCGACTGGGCAGATGAAACATGGCATCGTGGTATTGATGAAACTGCTG 3120
 GACTTCTCTACGAGCTGACCCGTACTTGTACCGTAGGCCACCACTACTACTTTGACGAC
 3181 MseI NspV CviJI BcgI MnII Taci Cac8I BcgI
 CviJI BcgI MnII Taci Cac8I CviJI
 CTGTCGGCTTAACTCTCTTGTAGGCATTGGTTTCGAAGGGGAAACAGCGAAAAGAAC 3240
 GACAGCCGAATTGGAGAGAAATCCGTAAACCAGCTTCGGCTTGTTCGGCTTTCTTG
 3241 MnII PstI RsaI BsrGI BscGI BseMII HhaI AcelII MseI
 BsrGI Bst4CI Taci HincII DdeI Cac8I HhaI AcelII MseI
 TGTACAGCGAAGAGGGCAGTCACGGGAAACTCAGCAAGCGCACTTACAGCGATTAAAG 3300
 ACATGTGCGCTTCTCGTCAAGTTGGCCCTTGTAGTCGTTGGTGAATGTCCGCTAATTTC
 3301 MseI BsaWI BscVI
 Macl Tsp45I HhaI CjeI BsrI Taci HhaI CjeI
 AluI CviJI MwoI ThaI CjeI BsrI Taci HhaI CjeI
 AGCTGATAGCGCGTGACAAAAACCCACCCAAAGCGTGGTAIGTGGAGTATGCCAACGAAAC 3360
 TCGACTATCGCCACTGTTTGGTGGTTCGACCACTACCTCATACGGTTGCTG
 3361 BscGI BsrI BciVI
 BsrI HhaI BscVI
 BsrI BciVI
 BsrI TspRI AcII AflIIII MleI
 BscGI ApaLI CviRI SspI ThaI MwoI AcII AflIIII MleI
 CGGATAACCGTCCGCAAGTGCACCGGAATATTCGGCCACTGGGGAGCAACGCGTA 3420
 GCCTATGGCAGGGTCCACGTGCCCTTATAAGCCGGTGACCCCTTCGTTGCGCAT
 3421 BpuI HgaI SmaII HgaI
 SmaII HgaI
 HgaI
 SimI TagI AflIIII HgaI
 HgaI MluI ThaI AarI BspMI HgaI
 AATTCGACCGACCCCTCCGATCACCTGGCTCAATGTAATGGCGAGCGTCGACCG 3480
 3422

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11/21

Fig. 1A (cont.)

TTGCGCTGGCTGCCACGGCTAGTGGACGGCAGTTACATTACAAGACGCTGGAGTGTCGGC

								CviRI	
								Fnu4HI	
								CviJI	
								TseI	
								NciI	
								SceFI	
								MspI	
								CviJI	
		BsaBI							
		HphI							
		SfaNI							
	CvIRI	CvIJII							
3601	AGAAA	ACTGG	ATCAG	CCGATT	ATCAT	ACCGA	A	TACGGCGTGGATA	CGTTAGCCGGGCTGC
	TCTTTG	CACGT	AGTCG	GCTTA	TAGT	AGTG	GCTT	TAGCCG	ACCTATGCAATCGGCCCCGACG

3761 TTGCGACCTCGCAAGGCATATTGCGCCTTGGCGGTTAACAGAAACGGATCTTCACTCGCG
 1843
 MboII MweI AcI PstI SmaI BpuYI Sau3AI NruI XbaI

12/21

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BstI
 BceI
 Fnu4HI
 HpaI
 MspI
 TseI
 AciI
 BbvI
 HinfI
 TfI
 Tth11I
 BcgI
 SccI
 SceI
 KhaI
 BccI
 GTGAAAAACCGCAGCAGGGAGGC AACCATGAACTCAACGACTCTCTGGCGACCATCGT
 CACTTTTGGCGTCGTCCCTCCGTTTGTTACTTGTGAGAGGACCCGCTGGTAGCA 3960
 3901

BsiEI PvuI ApaI Tsp509I 4021	BamHI DraI Sau3A TchIII C	MspI AflII SmaI TstI C	HinfI SfiI TfiI BstE C	BstI BpuI BsrE C C
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GAATTTCGGGATCGTTCAACATTTGGCAATAAGTTCTTAAAGATTGAACTCCTGTGTC
 CTTAGGGGCTAGCCAGTTGTAACCGTTATTCAGAATTCTAACTTAGGACACCG 4030

CTAAGGCGTACCTTGTGAA
 AfIIII BspLUIII MseI
 BspLUIII MseI
 Tsp509I Tsp509I MseI NlaIII
 MspI TaaI NspI
 MwoI BsaBI Tsp509I Tsp509I TaaI NlaIII
 CGCTCTTGCGATGATTATCATATAATTCTGTTGAATTACGGTAAGCATGTAATAATTAA
 4631 CGCAGAAAGCTACTAATAGTAGTTTGGCACTTAATGCCATTCTGCAATTAACTTAA
 4140

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Fig. 1A (cont.)

Fig. 1B

Enzymes chất do cung

Answers that do not make

Enzymes	Substrate	Product	Enzymes	Substrate	Product	Enzymes	Substrate	Product
AadE	Ade	Aad	AadE	Ade	Aad	AadE	Ade	Aad
BsdE	Bsp	Bsd	BsdE	Bsp	Bsd	BsdE	Bsp	Bsd
CsdE	Csp	Csd	CsdE	Csp	Csd	CsdE	Csp	Csd
DcsE	Dcc	Dcs	DcsE	Dcc	Dcs	DcsE	Dcc	Dcs
FcsE	Fcc	Fcs	FcsE	Fcc	Fcs	FcsE	Fcc	Fcs
PmsE	Pmc	Pms	PmsE	Pmc	Pms	PmsE	Pmc	Pms
SmsE	Smc	Sms	SmsE	Smc	Sms	SmsE	Smc	Sms

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15/21

pGPTV-GUS-Kan

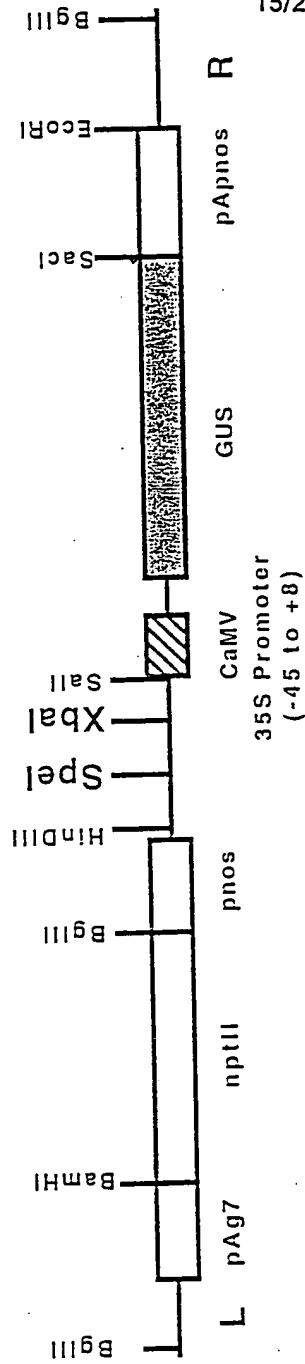


Fig. 3

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Fig. 4

